

MISSISSIPPI'S BMP IMPLEMENTATION MONITORING PROGRAM

# 2003 BMP Implementation Survey

*Survey Period*

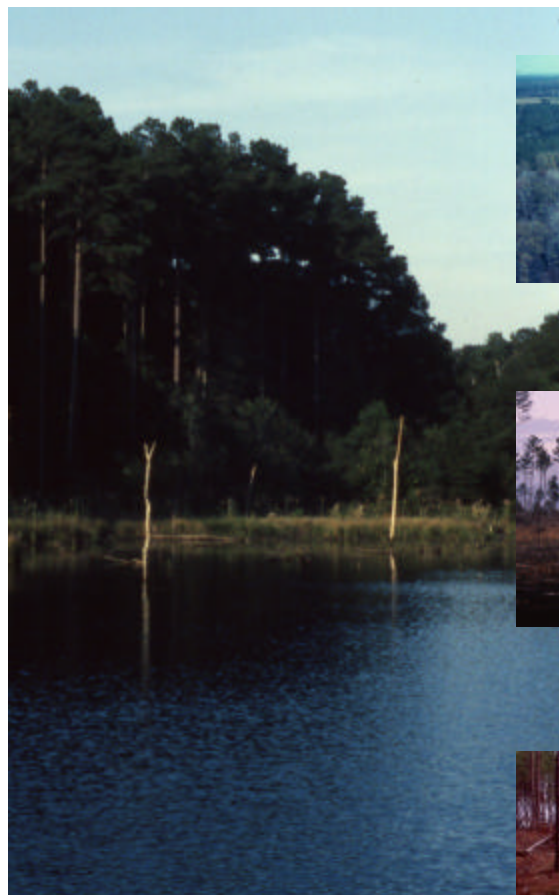
*November 2002—July 2003*

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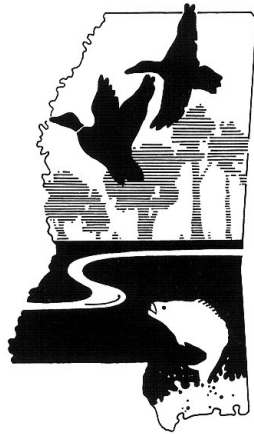


**March 2004**

Mississippi's Voluntary Silvicultural  
Best Management Practices Implementation  
Monitoring Program

**2003 BMP Implementation Survey  
for Mississippi**

Survey Period: November 2002 – July 2003



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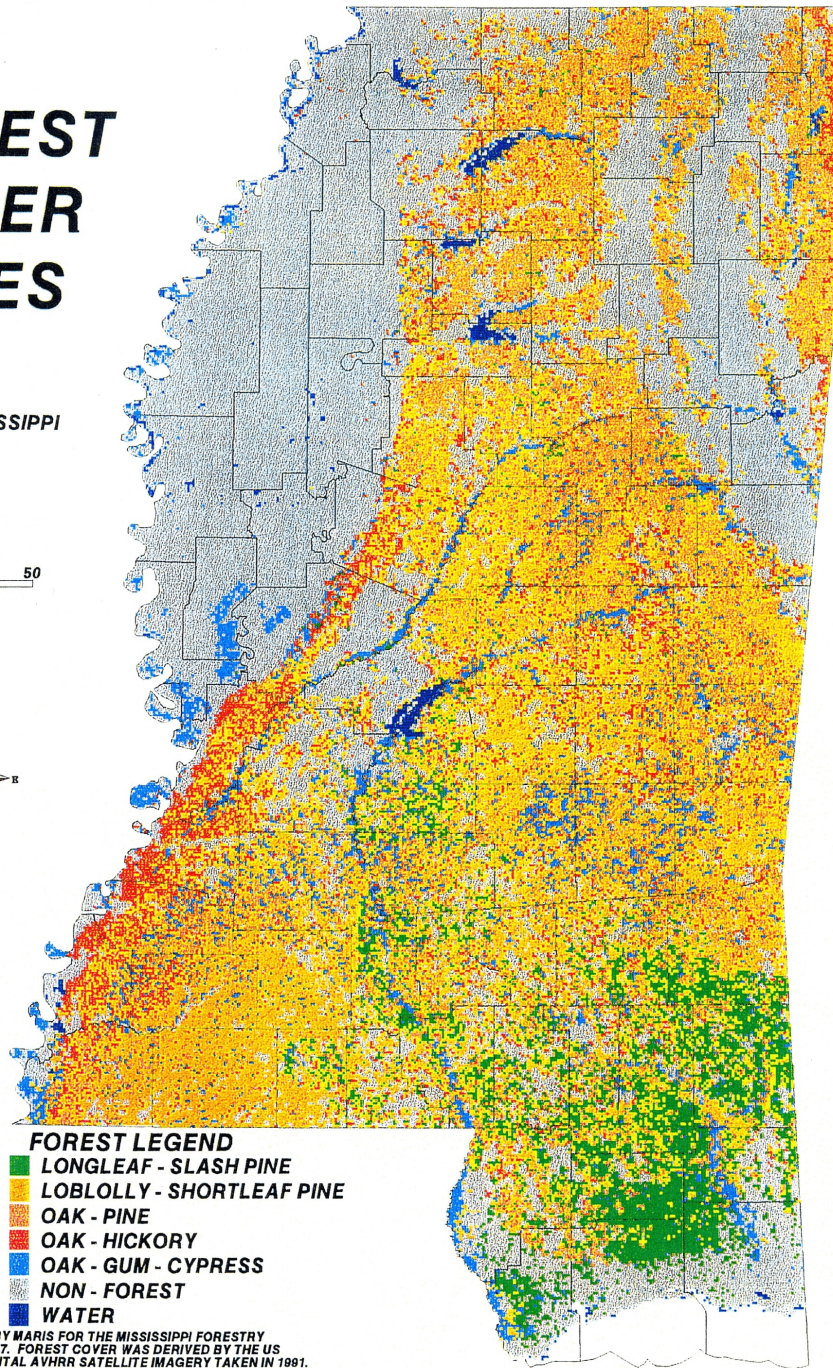
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# FOREST COVER TYPES

STATE OF MISSISSIPPI

0 25 50  
MAP SCALE IN MILES



## FOREST LEGEND

- LONGLEAF - SLASH PINE
- LOBLOLLY - SHORTLEAF PINE
- OAK - PINE
- OAK - HICKORY
- OAK - GUM - CYPRESS
- NON - FOREST
- WATER

THIS MAP WAS PREPARED BY MARIS FOR THE MISSISSIPPI FORESTRY COMMISSION, OCTOBER 1997. FOREST COVER WAS DERIVED BY THE US FOREST SERVICE FROM DIGITAL AVHRR SATELLITE IMAGERY TAKEN IN 1991. AVHRR SPATIAL RESOLUTION IS APPROXIMATELY 247 ACRES (1x1 km).

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## EXECUTIVE SUMMARY

In November 2002, the Mississippi Forestry Commission began a survey of best management practices (BMPs) voluntarily implemented on forestland in Mississippi. The survey ended in July 2003. This report presents the results of the survey.

The guidelines set forth in “Silviculture Best Management Practices Implementation Monitoring: A Framework for State Forestry Agencies”<sup>1</sup> were used to develop the 2003 BMP Implementation Survey for Mississippi.

A total of 258 sites having recent silvicultural activity were randomly selected to evaluate the voluntary implementation of best management practices. The sites were also evaluated for the presence of a significant risk to water quality. The Mississippi Forestry Commission’s Water Quality Team conducted the survey.

The following criteria were applied in selecting sites to be included in the survey:

- 1) Forest harvesting activity must have occurred within 24 months.
- 2) Sites must be at least 10 acres in size.
- 3) Sites were selected without regard to ownership.

The 2003 BMP Implementation Survey results for Mississippi revealed that 89 percent of best management practices applicable to the survey sites were implemented in accordance with the guidelines published in the handbook *Mississippi’s BMPs—Best Management Practices for Forestry in Mississippi*<sup>2</sup>. Figure 1 shows the BMP categories evaluated during the survey and the implementation results for each category.

Significant risk to water quality occurred on 11 percent of the sites evaluated. The highest percentage (68%) of significant risks was found in the Permanent Roads and Skid Trails/Temporary Roads categories.

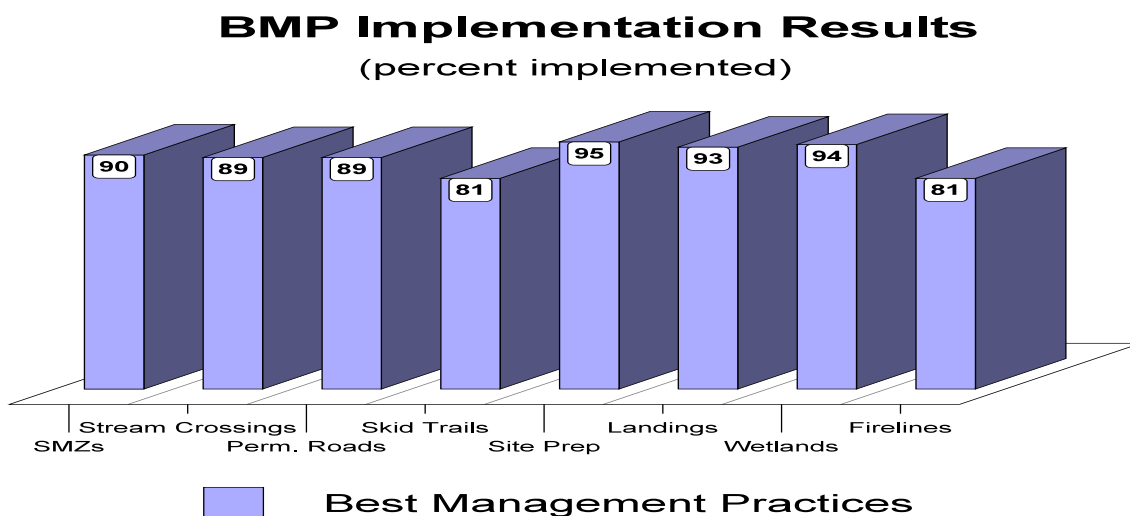


Figure 1. BMP categories and implementation results.

## INTRODUCTION

Mississippi has nearly 20 million acres of forestland, covering two-thirds of the state's total land area. Forests make an important contribution to Mississippians' quality of life by providing jobs, forest products, livestock forage areas, wildlife habitat, scenic areas, recreational experiences, and many other social and economic benefits. It is estimated that some type of forest activity occurs on nearly 800,000 forested acres each year in Mississippi. Mississippi's forestland also plays a vital role in protecting the state's water resources and maintaining water quality.

The Clean Water Act of 1987 required that proper steps be taken to prevent water pollution. Mississippi's Silvicultural Best Management Practices (BMPs) were established as a result of the Clean Water Act of 1987. Best management practices are non-regulated, voluntary guidelines for silvicultural activities that, when properly applied, will protect water quality from nonpoint source pollutants while maintaining site productivity. Nonpoint source pollution is defined in Section 319 of the Clean Water Act of 1987 as "pollution caused by diffuse sources that are not regulated as point sources and normally associated with agricultural, *silvicultural* [emphasis added] and urban runoff, runoff from construction activities, etc. Such pollution results in human-made or human-induced alteration of the chemical, physical, biological, and radiological integrity of the water."

The Best Management Practices Implementation Monitoring Program was developed to provide a way to measure the voluntary use of BMPs in Mississippi. The Mississippi Forestry Commission intends to conduct BMP Implementation surveys on a three-year cycle.



BEST MANAGEMENT PRACTICES  
FOR FORESTRY IN MISSISSIPPI

## BMPs IN MISSISSIPPI

Mississippi has a voluntary (non-regulatory) best management practices program for forestry. The program began in 1988 when the Department of Environmental Quality requested that the Mississippi Forestry Commission coordinate the development of voluntary best management practices for forestry in Mississippi. The Mississippi Forestry Commission worked with the Mississippi Forestry Association to put together a group of individuals representing a cross section of the forestry community to develop the guidelines. This group included landowners, loggers, forest industry, professional foresters, and the Department of Environmental Quality. Suggestions and comments from other states were also considered in the development of Mississippi's silvicultural BMPs.

The BMP guidelines were approved by the Mississippi Department of Environmental Quality and the Environmental Protection Agency and, in 1989, published in the handbook *Mississippi's BMPs—Best Management Practices for Forestry in Mississippi*<sup>2</sup>. The handbook was revised in 1995 and once again in 2000.

The Mississippi Forestry Commission (MFC) does not have a regulatory role in water quality, but serves to educate interested parties in the proper use of BMPs. The MFC, in conjunction with Mississippi State University, provides training to its field personnel. Mississippi State University Extension Service conducts a logger training program that addresses BMP implementation (see Table 1 below). In addition, the MFC works with the Mississippi Department of Environmental Quality when addressing water quality problems associated with forestry activities. The Mississippi Forestry Commission works with a number of forest industries by providing training courses for industry personnel and, at their request, conducting reviews of their BMP-related operations.

**Table 1. Logger Training Program.**

Course Title	# of Classes Held	Total Attendees	Average # per Class	Wood Supplying Firms Represented
Introduction	143	4,969	35	2,929
BMPs	128	4,941	39	2,926
Safety	122	4,712	39	2,789
Business	66	3,067	46	2,052
Total	459	17,689	39	10,696

*Source: Mississippi State University Extension Service. Attendance from 5/11/1996 through 1/1/2003.*

## **BMP IMPLEMENTATION SURVEY PROCEDURE**

The 2003 BMP Implementation Survey was developed based on the recommendations found in the document “Silviculture BMP Implementation Monitoring: A Framework for State Forestry Agencies”<sup>1</sup>. In order to promote consistent BMP monitoring throughout the southeastern region, the Southern Group of State Foresters adopted this document for use in developing or updating BMP monitoring programs.

### **Sampling Intensity**

The sampling procedure for the 2003 BMP Implementation Survey was designed as recommended in “Sampling and Estimating Compliance with BMPs”<sup>3</sup>. The number of sites needed to maximize the validity and credibility of the survey was calculated to be 258, which is  $\pm 5\%$  within the 95% confidence interval. The Mississippi Forestry Commission’s 1997 Resource Assessment was used to determine the amount of forest harvesting activity in the state. This information was used to determine the number and distribution of the sites to be included in the survey.

### **Eligible Survey Sites**

Two hundred fifty-eight geographical points of reference were distributed across the state in a manner representative of the distribution of forested areas having the potential need for BMPs. The Mississippi Forestry Commission used aerial reconnaissance to locate the specific points of reference by finding the respective latitude and longitude coordinates. The tract of land closest to each point of reference that met all site selection criteria was identified as an eligible survey site.

Site selection criteria used for the 2003 survey were: (1) sites had to have had some type of forest harvesting activity, either regeneration harvest or thinning, within a period of two years prior to the survey, (2) sites must be at least 10 acres in size, and (3) sites were selected without regard to ownership. The ownership of a site was determined after the site had been selected. This allowed for an unbiased selection and distribution of survey sites in regard to ownership.

### **Survey Site Evaluation**

Once a site was selected, a field visit was made by a member of the MFC’s Water Quality Team. When possible, the landowner was contacted and the BMP survey was explained.

When conducting field visits, the Water Quality Team assessed 73 concerns relating to each survey site, including 55 specific best management practices (see BMP Monitoring Inspection Form on pages 13-15). Best management practices were divided into the following categories:

- Streamside Management Zones (SMZs)
- Stream Crossings
- Permanent Roads
- Skid Trails/Temporary (Secondary) roads
- Site Preparation
- Landings
- Wetlands
- Fireline Construction

If a particular practice within a category did not apply to the survey site, it was recorded as Not Applicable (N/A). All other practices were considered applicable to the site and were evaluated on whether or not they were implemented as specified in Mississippi's BMP handbook<sup>2</sup>. This method of evaluation allowed each BMP category and, ultimately, the overall BMP implementation program, to be evaluated and the results expressed as a percent of applicable BMPs implemented.

The presence of a significant risk to water quality was noted for each best management practice evaluated. The Water Quality Team used the following standard to determine the presence of a significant risk to water quality: Significant risk to water quality exists if, during a normal rainfall, sediment is likely to be delivered to a permanent water body. The presence of a significant risk did not mean that water quality was impaired on the site.

All information recorded for each BMP was based on observations made at the time of the inspection. The evaluation process did not include any assumptions concerning future activities on the site.



BEST MANAGEMENT PRACTICES  
FOR FORESTRY IN MISSISSIPPI

## 2003 BMP IMPLEMENTATION SURVEY RESULTS

The 2003 BMP Implementation Survey revealed that 89 percent of best management practices applicable to the survey sites were implemented.

A total of 258 sites having recent silvicultural activity were randomly selected to evaluate the voluntary implementation of best management practices. A compilation of all survey data collected is found on the BMP Monitoring Inspection Form—State Totals (see pages 13–15).

### General Tract Information

*Silvicultural activity:* A regeneration harvest had occurred on 232 sites (90%) of the 258 sites surveyed. The remaining 10 percent of the sites involved thinning operations. Of the sites that had received a regeneration harvest, 121 had been artificially regenerated.

*Tract size:* The sites ranged in size from 10 acres to over 161 acres. Figure 2 shows the distribution of survey sites by tract size.

*Ownership:* The survey sites were distributed and selected without regard to ownership in order to ensure an unbiased sample. Ownership was determined after a site was located. Figure 3 shows the distribution of survey sites in regard to ownership. The 258 survey sites were in the following four forest ownership groups:

*Private Nonindustrial*—  
(153 survey sites, 59.3% of survey)

*State/Public*—  
(20 survey sites, 7.8% of survey)

*Federal*—  
(1 survey site, 0.4% of survey)

*Forest Industry*—  
(84 survey sites, 32.6% of survey).

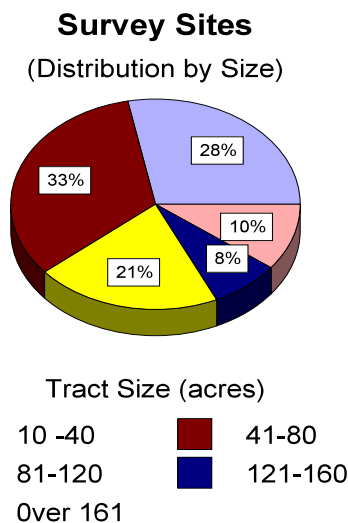


Figure 2. Distribution of survey sites by tract size.

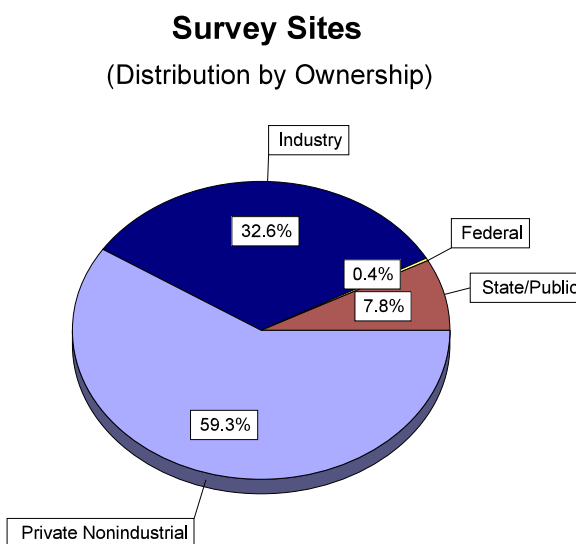


Figure 3. Distribution of survey sites by ownership.

*Counties:* The BMP survey sites were randomly distributed across the state based on the potential need for BMPs as determined by the change in forest cover shown in the Mississippi Forestry Commission's 1997 Resource Assessment. Survey sites were located in 74 of the 82 Mississippi counties. See Table 2 BMP Survey Sites by County, page 16.

*River basins:* For each site inspected for BMP monitoring, the river basin containing the site was identified. Survey sites were located in 10 of Mississippi's 11 river basins as delineated in the Mississippi Department of Environmental Quality's Basin Management Program. No survey sites were located in the Upper Mississippi River basin. The river basins of Mississippi are shown below in Figure 4.

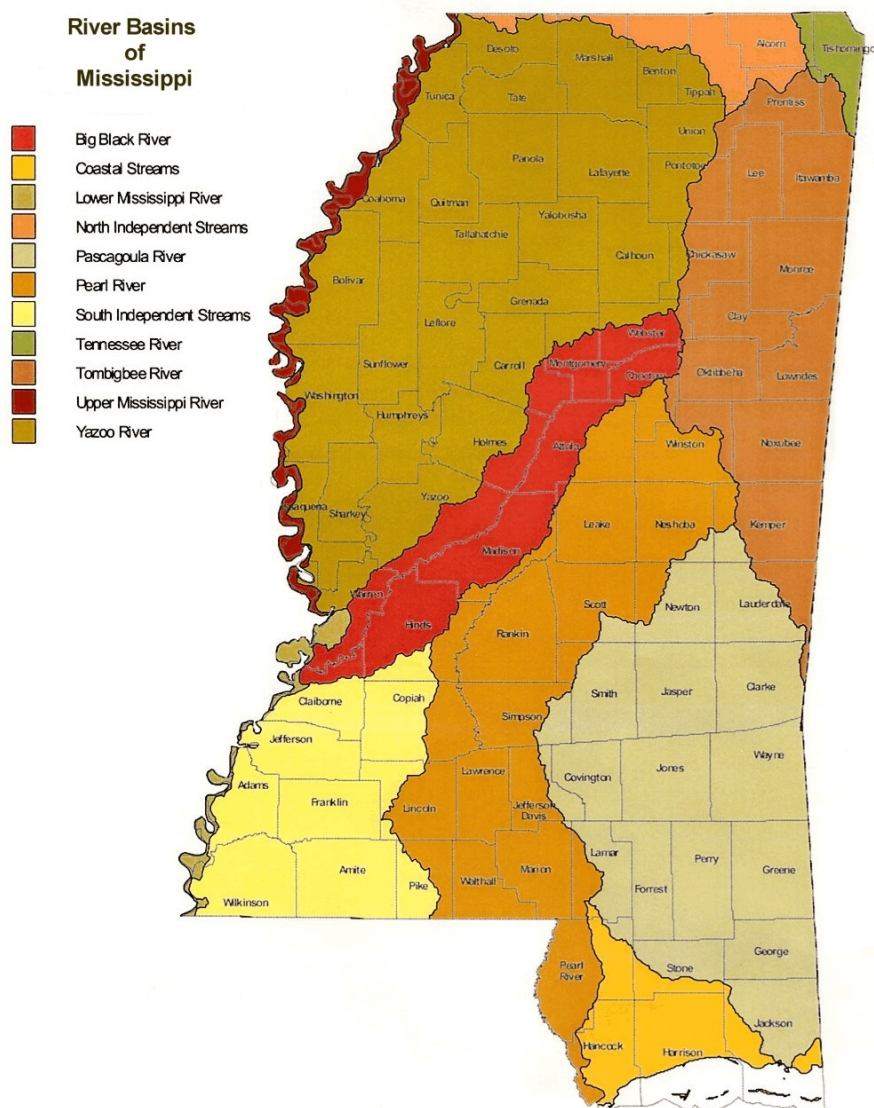


Figure 4. River Basins of Mississippi.

### Survey Sites with Applicable BMPs by Categories

The number of survey sites on which BMP categories were applicable is shown in Figure 5. (This information is also found in Table 3, page 17.)

The BMP categories Permanent Roads, Skid Trails/Temporary Roads, and Landings were applicable on more survey sites than the other categories. The Permanent Roads category was applicable on 217 (84.1%) of the 258 survey sites. The Skid Trails/Temporary Roads category was applicable on 248 (96.1%) and Landings on 254 (98.4%) of the survey sites.

The Streamside Management Zones category was applicable on 170 (65.9%) of the 258 sites surveyed, while Stream Crossings applied on 130 (50.4%) sites.

The three remaining categories (Site Preparation, Wetlands, and Fireline Construction) applied less frequently than any of the preceding categories. Site Preparation applied on 121 (46.9%) of the 258 survey sites, Fireline Construction applied on 64 (24.8%), and Wetlands on 6 (2.3%) sites.

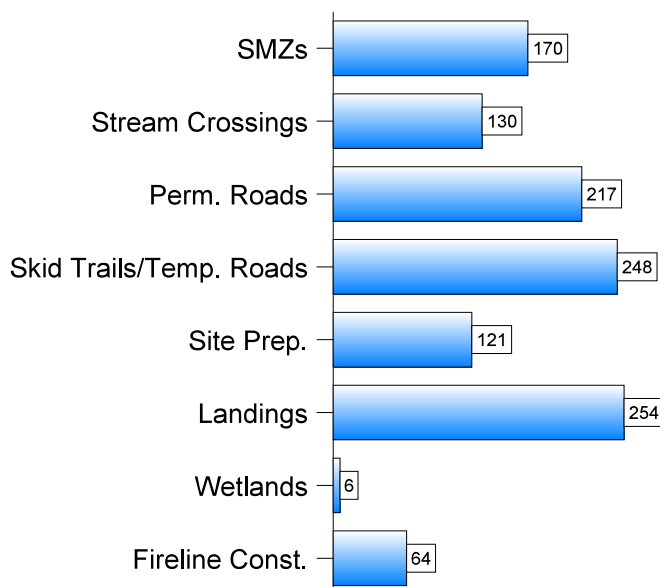


Figure 5. Number of survey sites for each BMP category.

### BMP Implementation

Applicable BMPs were evaluated on whether or not they were implemented as specified in Mississippi's BMP handbook<sup>2</sup>. Results showed that eighty-nine percent of best management practices were implemented on survey sites where they were applicable (see Table 3, page 17).

Implementation results were also evaluated by BMP category. Figure 6 shows the implementation results for each BMP category. The number and percent of all applicable BMPs implemented for each category is presented in Table 3, page 17.

The lowest percentage of BMPs implemented was found in the Skid Trails/Temporary Roads category with 80.9% of the 1,195 applicable practices implemented as specified. Of the 2,299 practices in the Permanent Roads category, 89.4% were implemented as specified, and 93.1% of the 1,212 practices in the Landings category were implemented as specified.

The Streamside Management Zones category had 89.6% of the 1,580 applicable practices implemented as specified, and the Stream Crossings category had 88.8% of the 581 applicable practices implemented as specified.

Applicable BMP practices in the Site Preparation category had the highest percentage implemented as specified with 95.3% of the 880 applicable practices implemented according to specifications. Of

the 18 applicable practices in the Wetlands category, 94.4% were implemented, and 81.3% of the 386 practices in the Fireline Construction category were implemented as specified.

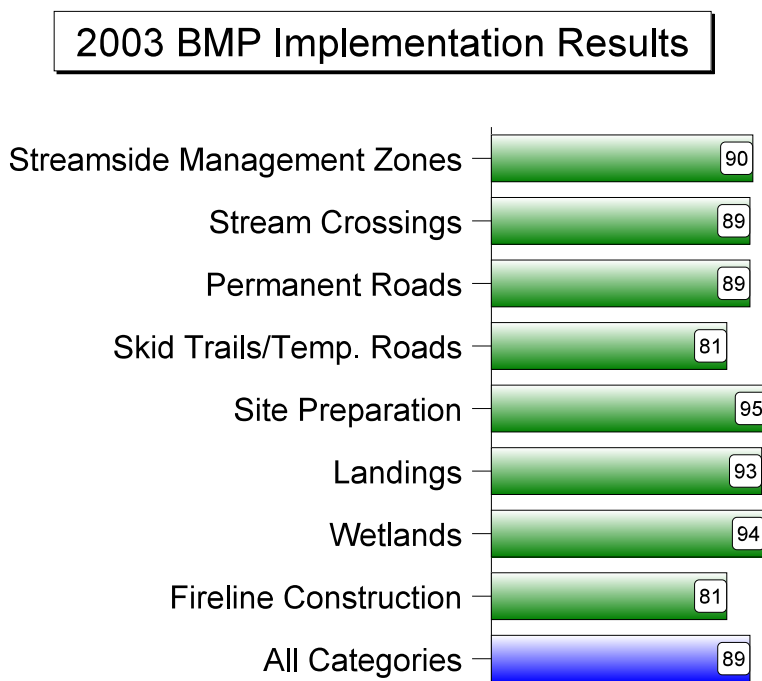


Figure 6. BMP categories and implementation results (percent).

### Significant Risk to Water Quality

Sites were evaluated for a significant risk to water quality each time a best management practice was determined to be applicable to the survey site. Of the 8,151 applicable BMPs evaluated, a significant risk to water quality was observed 76 times. These occurred on 29 of the 258 sites surveyed. Thirty-two of the 76 occurred on three sites. A complete listing of significant risks by individual best management practice is found on the BMP Monitoring Inspection Form—State Totals (see pages 13-15). A summary of significant risks by BMP category is given in Table 4, page 17.

No significant risks to water quality were found associated with practices in the Site Preparation or Wetlands categories.

Twelve significant risks to water quality were observed in relation to BMPs associated with streamside management zones. These 12 significant risks were found on five of the 170 survey sites where SMZs were applicable.

In the Stream Crossings category, six significant risks to water quality were found on four of the 130 sites where stream crossings were applicable.

There were 29 significant risks to water quality observed in the Permanent Roads category. These occurred on 16 of the 217 sites with permanent roads. The Permanent Road category had a higher

percentage of significant risks to water quality than any other BMP category. The majority of these were associated with the practice *roads reshaped and/or stabilized*. This practice was not implemented on 60 applicable survey sites.

Twenty-three significant risks were observed on 14 of the 248 sites where BMPs were associated with skid trails or temporary roads. Of the 23 significant risks, 11 were associated with roads or skid trails not stabilized during or after completion of harvest.

Four significant risks to water quality applied to BMPs associated with landings. These four were associated with the best management practice *restoring/ stabilizing loading ramps*.

There are 386 applicable practices for Fireline Construction on 64 sites. Two significant risks to water quality were noted for the category.

## CONCLUSIONS

Our forests play an essential role in the protection of water quality. They absorb rainfall, filter pollutants, and recharge underground water supplies. Forests produce much of the clean water we need for recreation and support of fish and wildlife habitats as well as the drinking water supply for millions of Americans.

Despite the tremendous contribution our forests and forestry make to water quality, forestry activities have the potential to adversely impact water quality locally. Voluntary best management practices are utilized in Mississippi to address this potential and help ensure water quality is protected. Studies have shown that BMP efforts work when applied on a landowner's property. The Mississippi Forestry Commission's 2003 BMP Implementation Survey for Mississippi was conducted to assess the implementation of the voluntary BMPs in the state.

It is essential that the forestry community continue its efforts to protect water quality and monitor protection efforts. The Mississippi Forestry Commission, Southern Group of State Foresters, and National Association of State Foresters are committed to the protection of our forests and water and to the routine assessment of protection measures implemented by the forestry community.



BEST MANAGEMENT PRACTICES  
FOR FORESTRY IN MISSISSIPPI

## APPENDIX

Mississippi Forestry Commission  
BMP Monitoring Inspection Form  
State Totals

**1. General Tract Information**

Silviculture Activity	Regeneration Cut	232	Thinning	26				
Estimated Tract Size Acre	10 - 40	73	41 - 80	85	81 - 120	54	121 - 160	20
	161 or more	26						
Ownership Group	PNIF	153	STATE	20	FEDERAL	1	INDUSTRY	84
Mississippi's River Basins								
Big Black River Basin		18						
North Independent Streams Basin		8						
South Independent Streams Basin		18						
Coastal Streams Basin		9						
Pascagoula River Basin		54						
Tennessee River Basin		2						
Lower Mississippi River Basin		6						
Tombigbee River Basin		60						
Upper Mississippi River Basin		0						
Pearl River Basin		55						
Yazoo River Basin		28						

**2. Site Characteristics**

Estimate Slopes Present	0% - 5%	99	6% - 20%	118	21% - 40%	37	Over 40%	4
Predominant Soil Texture	Clay	27	Clay Loam	105	Loam	16		
	Sandy Loam	98	Sand	0	Silty Soils	12		
Erodibility Hazards	Low	92	Medium	117	High	49		
Type of Stream Present								
	Perennial Stream	43	Intermittent Stream	75	Ephemeral Stream	82	N/A	58
Estimate Distance to Nearest Permanent Water Body								
	300 Ft. or Less	32	301 - 800 Ft.	36	801 - 1600 Ft.	41	1601 Ft. or More	149
Evidence of Spills or Fuels On Site	Yes	4	No	254				
Trash, Oil Cans, Hoses Or Other Containers Left On Site	Yes	15	No	243				
Has Tract Been Regenerated artificially?	Yes	121	No	137				

**3. Streamside Management Zones**

	N/A	Yes	No	Sig. Risk
SMZ width established according to BMP specs	95	141	22	2
Harvesting/thinning within SMZ according to BMP specs	103	134	21	1
SMZ integrity honored (no chem, fert, burning, log decks, etc., within SMZ)	99	146	13	1
Stream Course Clear of Logging Debris	95	138	25	2
SMZ Free of Roads and Landings	93	156	9	1
Stream Free of Sediment Due to Silvicultural Activity	92	146	20	1
Rutting Through Streams or Drains Avoided	97	147	14	0
Prescribed Burning Avoided	139	113	6	1
Blocking the Natural Flow of Water Avoided	91	148	19	2
Stream Banks Integrity Honored	96	147	15	1
<b>Section Totals</b>		<b>1,416</b>	<b>164</b>	<b>12</b>
<b>% Compliance</b>		<b>90 %</b>		

**4. Stream Crossings**

Ditches That Dump Into Streams Avoided	133	113	12	0
Stream Crossings Properly Installed	145	93	20	3
Number of Stream Crossings Minimized	141	113	4	0
Stream or Drain Crossings Installed At Right Angle Only	143	107	8	0
Stream Crossings Stabilized During Use	147	90	21	3
<b>Section Totals</b>		<b>516</b>	<b>65</b>	<b>6</b>
<b>% Compliance</b>		<b>89%</b>		

Mississippi Forestry Commission  
BMP Monitoring Inspection Form

	N/A	Yes	No	Sig. Risk
<b>5. Permanent Roads</b>				
Roads Respect Sensitive Area	45	209	4	1
Rutting Depth Does Not Exceed Six Inches For More Than Fifty Feet	42	190	26	4
Roads Located Where Side Drainage Can Be Achieved	42	208	8	0
Roads Wide Enough to Achieve Surface Drying	42	206	10	1
Roads Reshaped and/or Stabilized	41	157	60	11
Roads Meet Grade Specification	42	185	31	2
Roads Are Well Drained With Appropriate Structures (bridges, culverts, etc.)	63	162	33	2
Side Ditches Do Not Dump Into Streams	67	172	19	2
Flat No Grade Roads Avoided	49	184	25	1
Streambeds, Rocky Places, and Steep Slopes Avoided	59	187	12	1
Potential Problem Soils Avoided	47	195	16	4
<b>Section Totals</b>		2,055	244	29
<b>% Compliance</b>	89%			
<b>6. Skid Trails/Temporary (secondary) Roads</b>				
Sensitive Areas Respected	21	219	18	1
Majority of Skid Trail Grades (Steepness) Below 15%	12	219	27	2
Rutting Does Not Exceed Six Inches For More Than Fifty Feet	12	209	37	4
Water Bars, Turnouts, and Other Water Control Structures Present	35	148	75	5
Roads and Skid Trails Are Stabilized	15	172	71	11
<b>Section Total</b>		967	228	23
<b>% Compliance</b>	81%			
<b>7. Site Preparation</b>				
Sensitive Areas Respected	151	102	5	0
Contour Followed	160	96	2	0
SMZ Integrity Honored(No chem, fert, burning, log decks, etc. within SMZ)	170	82	6	0
Soil Disturbance Kept To A Minimum	147	104	7	0
Excessive Soil Compaction Avoided	146	110	2	0
Does It Appear That Chemicals Were Used According To Label Spec	186	70	2	0
Disturbance On Slopes Minimized	147	103	8	0
Water Diverted From Site Prep Area To Vegetated Surface	157	96	5	0
Extremely Hot Burns Avoided	178	76	4	0
<b>Section Total</b>		839	41	0
<b>% Compliance</b>	95%			
<b>8. Landings</b>				
Location Outside of SMZ	48	208	2	0
Well-Drained Location	4	246	8	0
Number and Size Minimized	4	252	2	0
Sensitive Areas Respected	16	240	2	0
Restored Stabilized	6	182	70	4
<b>Section Total</b>		1,128	84	4
<b>% Compliance</b>	93%			

Mississippi Forestry Commission  
BMP Monitoring Inspection Form

9. Wetlands	N/A	Yes	No	Sig. Risk
Hydrology of Site Unaltered	252	5	1	0
Roads, Drainage Structures Applied Properly	252	6	0	0
Mandatory BMP's Followed	252	6	0	0
<b>Section Totals</b>		17	1	0
<b>% Compliance</b>	94%			
<hr/>				
10. Fireline Construction				
Firebreak Erosion Controlled	196	48	14	0
Majority of Fireline Constructed Around Slopes or Grade of Less Than 10%	196	54	8	1
Water Bars, Turnouts and Other Water Control Structures Properly Installed	199	34	25	0
Diversion Ditches Not Constructed at the Head of a Drain	198	53	7	0
Firelines Not Constructed Down the Slope of Natural Gully	200	54	4	0
SMZs Left Between the Fireline and Stream	217	35	6	0
Avoid Constructing Firelines into an SMZ	214	36	8	1
<b>Section Totals</b>		314	72	2
<b>% Compliance</b>	81%			
<hr/>				
Follow Up Questions				
Was Activity Supervised By Professional Forester?	115	133	10	
Was Landowner Familiar With BMP Handbook?	140	101	17	
Was Logger Familiar With BMPs?	140	112	6	
Were BMPs Included in Contract?	188	56	14	
Has Logger Completed Logger Educational Training Courses?	181	66	11	
Are Recommendations Planned for Landowner, if Needed?	140	70	48	
<b>Section Totals</b>		538	106	
<b>% Compliance</b>	84%			
<b>State Totals</b>				
<b>% Compliance</b>	89%			

Table 2. BMP Survey Sites by County.

<b>County</b>	<b>Change of Forest Cover <sup>1</sup> (percent)</b>	<b>Survey Sites</b>	<b>County</b>	<b>Change of Forest Cover <sup>1</sup> (percent)</b>	<b>Survey Sites</b>
Adams	0.13	0	Leflore	0.46	1
Alcorn	0.79	2	Linclon	1.76	5
Amite	1.27	3	Lowndes	1.08	3
Attala	1.27	3	Madison	1.28	3
Benton	0.83	2	Marion	1.26	3
Bolivar	1.23	3	Marshall	2.08	6
Calhoun	1.33	4	Monroe	0.85	2
Carroll	0.76	2	Montgomery	1.03	3
Chickasaw	0.42	1	Neshoba	2.16	6
Choctaw	1.93	5	Newton	2.76	8
Claiborne	0.33	1	Noxubee	1.34	4
Clarke	2.43	7	Oktibbeha	1.19	3
Clay	0.86	2	Panola	0.44	1
Coahoma	0.17	0	Pearl River	3.15	9
Copiah	2.55	7	Perry	1.25	3
Covington	0.77	2	Pike	1.31	3
De Soto	0.16	0	Pontotoc	0.34	1
Forrest	1.08	3	Prentiss	0.97	2
Franklin	1.36	4	Quitman	0.14	0
George	0.83	2	Rankin	2.77	8
Greene	1.5	4	Scott	2.02	6
Grenada	0.98	2	Sharkey	0.31	0
Hancock	1.44	4	Simpson	1.81	5
Harrison	1.19	3	Smith	1.67	5
Hinds	1.65	4	Stone	1.33	3
Holmes	0.81	2	Sunflower	0.83	2
Humphreys	0.51	1	Tallahatchie	0.49	1
Issaquena	0.57	1	Tate	0.15	0
Itawamba	0.83	2	Tippah	0.6	1
Jackson	1.16	3	Tishomingo	1.51	4
Jasper	1.5	4	Tunica	0.2	0
Jefferson	0.58	1	Union	0.39	1
Jeff. Davis	0.86	2	Walthall	0.66	1
Jones	1.28	3	Warren	0.76	2
Kemper	3.51	10	Washington	1.25	3
Lafayette	2.55	7	Wayne	2.06	6
Lamar	1.25	3	Webster	1.5	4
Lauderdale	3.98	11	Wilkinson	0.57	1
Lawrence	0.76	2	Winston	2.22	6
Leake	2.05	6	Yalobusha	1.28	3
Lee	0.18	0	Yazoo	0.97	2

<sup>1</sup> The 1997 Resource Assessment was used to determine percent change of forest cover.

Source: Mississippi Automated Resource Information System (MARIS).

**Table 3. Applicable BMPs Implemented by Category.**

<b>BMP Category</b>	<b>Number of Survey Sites</b>	<b>Total Applicable Practices</b>	<b>BMPs Implemented *</b>	
			<i>Number</i>	<i>Percent</i>
Streamside Management Zones	170	1,580	1,416	89.6
Stream Crossings	130	581	516	88.8
Permanent Roads	217	2,299	2,055	89.4
Skid Trails/Temporary Roads	248	1,195	967	80.9
Site Preparation	121	880	839	95.3
Landings	254	1,212	1,128	93.1
Wetlands	6	18	17	94.4
Fireline Construction	64	386	314	81.3
State Totals	—	8,151	7,252	89.0

\* BMPs implemented as specified in Mississippi's BMP handbook <sup>2</sup>.

**Table 4. BMP Categories with Significant Risks to Water Quality.**

<b>BMP Category</b>	<b>Number</b>	<b>Percent</b>
Streamside Management Zones	12	15.8
Stream Crossings	6	7.9
Permanent Roads	29	38.1
Skid Trails/Temporary Roads	23	30.3
Site Preparation	0	0.0
Landings	4	5.3
Wetlands	0	0.0
Fireline Construction	2	2.6
State Totals	76	100.0

## REFERENCES

- <sup>1</sup> “Silviculture Best Management Practices Implementation Monitoring: A Framework for State Forestry Agencies,” BMP Monitoring Task Force, Southern Group of State Foresters, June 2002.
- <sup>2</sup> *Mississippi’s BMPs—Best Management Practices for Forestry in Mississippi*, Third Edition, Mississippi Forestry Commission, March 2000.
- <sup>3</sup> McNew, Ronald W., “Sampling and Estimating Compliance with BMPs,” Implementation Monitoring of Forestry Best Management Practices Workshop, Southern Group of State Foresters and USDA Forest Service, Atlanta, Georgia, January 23-25, 1990. Edited by G. Dissmeyer.



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